A PRACTICAL Society of Natural History has been recently established in Paris under the title of Société Parisienne. Its special aim is to procure young people the means to study nature by lectures and excursions.

FROM researches on the nature of the vowel "clang," in Prof. Helmholtz's physical laboratory, M. Auerbach (*Pogg. Ann.*) comes to the following conclusions, which appear to throw new light on some unsolved problems :—1. All clangs, especially the vowels of the human voice and speech, are to be defined as the consequence of the joint action of two moments, a relative and an absolute. 2. The relative moment is the mode of distribution of the whole intensity among the individual partial tones as determined by their ordinal number. The absolute is the dependence of the whole intensity on the absolute pitch of the partial tones, and the modification of the distribution, on change of the fundamental tone, therewith connected. 3. The difference of the vowels in the former relation is a result of the power of changing the form of the mouth-cavity. The differences of the absolute pitches characterising the various vowels, and of their influence, are a result of the power of changing the volume and size of the mouth-cavity. 4. The first partial tone is always the strongest in clang; it deserves, therefore, the name of fundamental tone. 5. The intensity of the partial tones as such decreases in general as their ordinal number increases; exceptions indicate the nearness of the boundary of the consonant region. 6. The intensity of the partial tones decreases more slowly the nearer the vowel clang is, therefore more quickly the duller this is. 7. The characteristic pitch is higher the clearer, and deeper the duller, the vowel clang. 8. The variations of the intensity, in consequence of the influence of the characteristic pitch, are greater the fuller the vowel is. Very slight variations indicate the nearness of the consonant region. 9. All the vowels admit of being sung within the whole range of the human voice; but the dull speak in very high, the clear in very deep, positions. 10. A little attention only is needed to perceive in a vowel clang the over-tones (often comparatively very strong) without artificial aids. They then sound very similar to the pure tuning-fork tones.

CONTINUING his researches on fluorescence, M. Lommel (*Pogg. Ann.*) arrives at the following conclusions :—1. There are two kinds of fluorescence. In one each excitant homogeneous ray falling within the limits of the fluorescence-spectrum excites not only rays of greater and equal, but also rays of shorter wave length; the latter so far as they belong to the region in question. In the second kind, each homogeneous ray excites only rays of greater or equal wave length. 2. There are substances which have only the first kind of fluorescence; each excitant ray excites the whole fluorescence spectrum. Hence they are not subject to Stokes's law. Such are naphthalin, red chlorophyll, and eosin. 3. There are substances which have only the second kind of fluorescence, and which therefore, throughout their fluorescence spectrum, obey Stokes's law. Such are most of the fluorescent substances hitherto examined. 4. There are substances which have both kinds of fluorescence, so that the first kind is proper to a certain portion of their fluorescence spectrum, and the second kind proper to their remaining parts. Hence these obey Stokes's law only in part. Such are chamaelin red, blue, and green.

THERE are several ways of decomposing water with only one electrode. One is this: let some water in a glass be brought in contact with a Wollaston electrode (*i.e.*, a fine platinum wire inclosed in glass and touching the water only by its extreme section), and connect the wire with the conductor of an electric machine in action. Fine bubbles of oxygen are liberated at the point. What becomes of the hydrogen? M. Lippmann replies (*Journal de Physique*) that so long as the water continues charged the hydrogen remains in excess. On discharging the water it escapes at the platinum point, this being then the electrode of exit. But may it not be that the hydrogen is set at liberty within the liquid or at its surface while the corresponding oxygen is liberated (there being, according to this view, two electrodes, one the platinum point, the other diffuse and of large surface)? The objection, M. Lippman says, cannot be refuted by direct experiment, but the impossibility of the hypothesis appears on considering the quantities of chemical and electrical work called forth during the experiment. He gives two demonstrations of this.

WE have received the first two numbers of a new Italian monthly periodical, *l'Elettricista*, the object of which is to give an account of the progress of the science of electricity. This publication is one of many signs that the countrymen of Galileo have made up their minds again to take an active part in scientific investigation, and especially not to forget that branch which owes so much to Volta. The papers do not lay claim to originality, but the first number especially is interesting, and if kept up on the same standard the periodical can do a great service in spreading modern ideas in Italy. We note especially the paper on absolute electrical units, by Naccari, and on some phenomena presented by electrified powders, by A. Ricco. The second number contains chiefly abstracts from foreign periodicals. Padre Secchi draws some conclusions from imaginary results, which he believes were obtained by Mr. Chrystal in his verification of Ohm's law.

IN a paper read the other day by M. Fulke, before the Wissenschaftlicher Club of Vienna, on German emigration to the United States, it was estimated that from 1820 to the present, nearly 10,000,000 must have emigrated, or a fourth of the entire population of the United States. M. Fulke lamented the extent of the movement, also the facility with which the Germans in America seemed to lay aside their customs and usages, and even their native tongue. In conclusion, he drew a parallel between the Germans in the United States, and the Germans in the whole of Austria. Here, too, the German element was about a fourth of the whole population, but what a contrast to the other case!

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus radiatus*) from India, presented by Mrs. Payton; a Rose Hill Parrakeet (*Platycercus eximius*) from Australia, presented by Mr. J. J. Chapman; a Rufous-vented Guan (*Penelope cristata*) from Central America, presented by Mr. Daniel Miron; two Hooded Crows (*Corvus cornix*), European, presented by Mr. F. Cresswell; a Macaque Monkey (*Macacus cynomolgus*) from India, deposited; a Two-Wattled Cassowary (*Casuarius bicarunculatus*) from the Aroo Islands, a Hooded Crane (*Grus monachus*) from Japan, a Hodgson's Barbet (*Megalæma hodgsoni*), two Striated Jay Thrushes (*Grammatopila striata*), three Black-headed Sibias (*Sibia capistrata*), three Brown-eared Bulbuls (*Hemixos flavala*), two Rufous-bellied Bulbuls (*Hypsipetes Mclellandi*), a Red-headed Laughing Thrush (*Trochalopteron erythrocephalum*) from the Himalayas, purchased.

SCIENTIFIC SERIALS

FROM the *Naturforscher* (January, 1877) we note the following papers :—On radiation in space, by H. Buff.—On cave-insects, by L. Bedel and E. Simon.—On the germination of the fruits of mosses, by P. Magnus.—On the action of a di-electric body upon an electric one, by R. Felici.—On the preparation of pure alcohol yeast, by Moritz Traube.—On the limit between chalk and tertiary deposits in the Rocky Mountains (U.S.), by M. Delafontaine.—New researches on Bacteria, by E. v. M.—On the specific power of glycose (grape sugar) of turning the plane

of polarisation, by B. Tollens.—On the exhalation of carbon acid and the growth of plants, by L. Rischawi.—Researches on assimilation in plants, by A. Stutzer.—On the assimilation of water and lime salts by the leaves of plants, by J. Böhm.—On the phenomena of heat accompanying muscular action, by J. Nawalichin.—On the molecular volumes of sulphates and selenates, by Otto Pettersson.—Electro-dynamic theory of matter, by F. Zoellner.—Elements of the orbit of the double-star 24 η Cassiopeiæ, by Ludwig Graber.—On the action of an electric discharge upon solid isolators, by W. Holtz.—On the external sexual differences upon our fresh-water fish, by V. Fatio.

THE *Memoirs of the St. Petersburg Society of Naturalists*, vol. vii., contains a series of valuable physiological contributions, the most important of which are :—On the comparative anatomy and metamorphology of the nervous system of the Hymenoptera, by E. K. Brandt.—On the influence of condensed air, oxygen, and carbonic acid on the nervous irritability of animals, by M. Tarkhanoff.—On changes in the eye produced by the section of the *nervus trigeminus* by M. Chistoserdoff.—On the psycho-motor centres and on the bifurcation of electric currents in the cerebellum and corpora quadrigemina, by MM. Weliky and Shepovaloff.—On the influence of salicylic acid on the circulation of the blood, by MM. Dubler and Chistoserdoff.—The action of chinine and atropine on the hearts of frogs and rabbits, by Mdlle. Pantéléeff, and on the nucleus of the red globules of the blood, by A. F. Brandt.

SOCIETIES AND ACADEMIES

LONDON

Royal Astronomical Society, March 9.—Prof. Cayley, F.R.S., vice-president, in the chair.—The minutes of the previous meeting were read by Mr. Glaisher, F.R.S., the recently-elected secretary.—Two communications of immediate importance were made by the Astronomer-Royal. The first of these referred to the supposed intra-mercurial planet, and he expressed a wish that it should be published as widely as possible without delay in order that amateur astronomers might lose no opportunity of scrutinising the sun's disk during the latter half of the present month, but especially on the 22nd instant, from sunrise till sunset. He had been requested by M. Leverrier to make known that his computation of the elements of the supposed planet, from such reported observations as were available, pointed to March 22 as the day on which it might be expected to transit the sun's disk. He recommended that the disk should be continuously watched for several days before and after that date. The second communication of the Astronomer-Royal referred to the opportunity which will occur next autumn of determining the solar parallax by observations of Mars in opposition. He read an extract from a paper of his own published some years ago in the *Monthly Notices*, showing the great importance he attached to this method as compared with others, and pointing out that fifteen years from the present time must elapse before another nearly equal opportunity will occur of applying it. He dwelt with much emphasis on the ease and simplicity of the observations required and on their singularly inexpensive character. Lord Lindsay had offered to lend his heliometer, and Mr. Gill had offered his services gratuitously for an expedition to St. Helena or Ascension for the purpose, so that the money required would not exceed 500*l*. The Government would be asked to supply this sum, but if they refused, other means should be taken to raise the money, and if a subscription list became necessary, he would gladly contribute 20*l*. himself. Another Fellow, a member of the Council, then suggested that a part of the Carrington bequest might be available, and failing that, offered to contribute 100*l*. towards the expedition if it had to be carried out by private means.—Mr. Gill was called upon to explain the peculiar merits of this method of determining the solar parallax. It depended upon the difference of R.A. between Mars and certain stars measured early and late on the same day, which measures could be made by the heliometer with extreme accuracy.—Papers were presented by Prof. Zenger, C. Todd, A. T. Arcimis, S. W. Burnham, Dr. Robinson, A. de Gasparis, E. J. Stone, A. Marth, J. Tebbutt, Capt. Tupman, Prof. S. Newcomb, Capt. Abney, Sir G. B. Airy, T. W. Backhouse, Rev. S. J. Perry, Dr. Ball, Dr. Royston Piggott, Mr. Penrose, Mr. Knott, Mr. Neison, and Mr. Kobel, some of which were read. Four new Fellows were elected.

Linnean Society, March 1.—Prof. Allmann, F.R.S., president, in the chair.—Messrs. R. Gillies, H. Goss, Dr. A. Gunther, and M. Moggridge were elected Fellows, and Dr. M. C. Cooke an Associate of the Society. The embryo of *Dyospyros embryopteris*, Pers., upon the fruit and seed of which species Gærtner founded his genus *Embryopteris*, was exhibited by Mr. W. P. Hiern. He explained how the immature fruit was gathered in India for the sake of the tannin contained, and hence the probability of Gærtner's having been misled as to the true structure of the seed and imperfect embryo, which Mr. Hiern now correctly describes.—Dr. Maxwell Masters brought before the meeting a series of specimens illustrative of what is commonly known as "Burrs" or "Witch-knots." The examples exhibited were collected by Mr. Webster, gardener to the Duke of Richmond and Gordon. Some of these productions were illustrations of dimorphism or bud-variation, probably reappearance of latent ancestral characteristics or disjunction of parental forms usually amalgamated. Others doubtless owed their origin to some injury to the terminal bud, subsequent hypertrophy of the branches, and excessive development of adventitious buds. Injury apparently was frequently the result of insect puncture, as in the case of the birch, the "burrs" on which had been lately discovered by Miss E. Omerod to be produced by a species of *Phytopus*, at other times it was the result of parasitic fungi or of injury consequent on frost, the wounds caused by birds, the action of wind, &c.—A most important communication on the flora of Marocco (*Spicilegium Floræ Maroccanæ*) was read by Mr. John Ball, F.R.S. (Pres. Alpine Club). By a sketch map he pointed out the peculiar physical features of the territory penetrated at several points by Dr. Hooker, Mr. G. Maw, and himself in 1871, and he mentioned how that Marocco, though within but a few days' sail of London, was in many respects a *terra incognita* to Europeans. Whilst the Sultan and population of Marocco generally are averse to the admission of Christians and strangers into their country, the hill tribes, derived from the warlike Berbers, are decidedly hostile and indeed dangerous to travel among. The flora, then, of this interesting region, is necessarily very imperfectly known. Mr. Ball gave a lucid historical account of what little had been done by earlier botanists, Zanoni 1675, Spotswood 1673, and Broussonnet 1790-9. The collections of the latter having been distributed to several European botanists, and here and there incidentally noticed by them; Cavanilles of Madrid temporarily secured to Spain a fair share of honour by his publications in the scarce periodical *Ann. d. Ciencias Nat.* M. Cosson has lately been working Broussonnet's material deposited in the Montpellier Museum. Schousboe, Danish Consul at Mogador, commenced 1801, but left unfinished a flora of Marocco. Jackson (1809) in his account of the Empire of Marocco, has noticed the curious Cactoid Euphorbias. P. Barker Webb in a short visit (1827) to Tangier and Tetuan, discovered a new genus of Cruciferæ. Between 1840-1870 several Frenchmen touched at various points, and the "Pugillus Plantarum" of M. Boissier, contains merely a germ of future work.—The Rev. Mr. Lowe contributed to the Linnean Society, 1850, a list of plants observed by him at Mogador. But notwithstanding the preceding labours, a mere tithe of the flora has yet been worked out, and almost nothing satisfactorily. Mr. Ball, in 1851, attempted to reach the higher summits of the Lesser Atlas, but the disturbed condition of the district obliged him to desist. M. Balansa was likewise repulsed in 1867 (though fortunate in collecting numbers of new and remarkable species); but Mr. Maw was more successful in 1869. Messrs. Hooker, Maw, and Ball's routes in 1871 were then pointed out, and detailed but technical description of the plants collected, given. In giving a summary of results in a tabular form, Mr. Ball showed that the proportion of Compositæ, leguminosæ, and Liliaceæ, is unusually large, whilst Gramineæ, and Ranunculaceæ is exceptionally small. Of Rosaceæ there are 16, of Saxifrageæ 5, of Primulaceæ 7, of Gentianeæ 8, and of Cyperaceæ only 28 species, thus showing the peculiarity that but a small proportion of these natural orders are present, which otherwise are so characteristic of the mountainous countries of the north temperate zone. It seems as if five temperate floras were represented as follows:—1, Mediterranean in general; 2, Peninsula; 3, Desert; 4, African mountain flora; 5, Macaronesian—to which may be added 6, Cosmopolite or widely-spread European species. The total number of phanerogamous plants now described are 1618 species, and among these many novelties.—Mr. J. G. Baker then read a paper on the Liliaceæ, Iridiaceæ, Hypoxidaceæ, and Hamodoraceæ of the late Dr. Welwitsch's Angolan Herbarium, which, through the courtesy of the executors, he has been enabled to work out. Not only are there a large proportion of the species new to